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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,112	01/31/2001	Hiroshi Nomura	P20209	1160

7055 7590 06/18/2004

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RESTON, VA 20191

EXAMINER

YE, LIN

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/774,112

Applicant(s)

NOMURA ET AL.

Examiner

Lin Ye

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-31 is/are allowed.
- 6) ☒ Claim(s) 1, 10-14 and 21 is/are rejected.
- 7) ☒ Claim(s) 2-9 and 15-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Normura et al. U.S. Patent 5,748,388.

Referring to claim 1, the Normura reference discloses in Figures 1-3, a zoom lens (10, See Col. 3, line 20) comprising: a plurality of lens groups (front lens group L1 and rear lens group L2, see Col. 3, lines 26-29) which are moved with respect to each other to change a focal length of said zoom lens (See Col. 3, Lines 49-65); and a cam barrel having at least one cam groove formed on an inner peripheral surface thereof (See Col. 9, lines 22-25), wherein at least one of said plurality of lens groups is moved in a direction of an optical axis by rotation of said cam barrel in accordance with a contour of said cam groove (see Col. 10, lines 19-21); wherein said cam barrel comprises: a first barrel (first moving barrel 20, see Col. 5, lines 59) having said cam groove (as shown in Figures 1 and 3, Cam grooves or slots formed on the inner surface of a barrel, see Col. 9, lines 30-31) on an inner peripheral surface thereof; and a second barrel (second moving barrel 19, see Col. 5, lines 61-63) which

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is fitted on a front part of an outer peripheral surface of said first barrel (20), said first barrel (20) and second barrel (19) being movable in said optical axis direction with a predetermined clearance there between in the optical axis direction while being rotatable together about said optical axis, so that an external force applied to said zoom lens from the outside of said zoom lens is transmitted to said first barrel via said second barrel (See Col. 9, lines 64-67 and Col. 10, lines 1-4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Normura et al. U.S. Patent 5,748,388 in view of Ohkawara et al. U.S. Patent 5,786,853.

Referring to claims 10 and 12, the Normura reference discloses all subject matter as discussed in respected claim 1, except that the reference does not explicitly show a focusing lens group positioned behind the plurality of lens groups (front lens group L1 and rear lens group L2) and zoom lens is incorporated in a digital camera.

The Ohkawara reference discloses in Figure 5, a digital camera including a plurality of lens groups (101, 102 and 104, see Col. 7, lines 1-10) and a focusing lens group (focus-compensation lens 105, see Col. 7, lines 25-30). Focusing lens group (105) is driven

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independently of an axial position of each of said plurality of lens groups by focus-compensation lens motor 120 (See Col. 7, lines 47-51). The Ohkawara reference is evidence that one of ordinary skill in the art at the time to see more advantages for digital camera system has a plurality of lens groups for adjusting focal length and focus lens group for bring an object which is to be photographed into focus so that the digital camera can perform a zooming operation while keeping a focused state and allow a user to set a field of view as intended. For that reason, it would have been obvious to see the digital camera has a focusing lens group positioned behind the plurality of lens groups (L1 and L2) disclosed by Normura.

5. Claims 11 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Normura et al. U.S. Patent 5,748,388 in view of Iwasaki et al. U.S Patent 5,721,645.

Referring to claims 11 and 13, the Normura reference discloses all subject matter as discussed in respected claim 1, except that the reference does not explicitly show a shock absorber (coil spring) positioned between the first barrel and the second barrel.

The Iwasaki reference discloses in Figures 1-2 and 5, a zoom camera comprises the first barrel (10) and the second barrel (13) are movable together (See Col. 4, lines 66-67); and a shock absorber (extension coil spring 18) positioned between the barrel 10 and barrel 13 (See Col.5, lines 1-19). The Iwasaki reference is evidence that one of ordinary skill in the art at the time to see more advantages for using coil springs between tow movable barrels so that springs can keep pressing against both barrel and transmit the external force to both barrel together. For that reason, it would have been obvious to see a shock absorber (coil spring) positioned between the first barrel and the second barrel disclosed by Normura.

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Referring to claim 14, the Normura and Iwasaki references disclose all subject matter as discussed in respected claim 13, and the Iwasaki reference discloses spring comprises a plurality of compression springs provided at substantially an equi-angular distance about an axis of said cam barrel as shown in Figure 5.

6. Claim 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Normura et al. U.S. Patent 5,748,388 in view of Iwasaki et al. U.S. Patent 5,721,645 and Ohkawara et al. U.S. Patent 5,786,853.

Referring to claim 21, the Normura, Iwasaki and Ohkawara references disclose all subject matter as discussed in respected claims 12-13.

Allowable Subject Matter

7. Claims 2-9 and 15-20 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Referring to claims 2-9 and 15-20, the prior art does not teach or fairly suggest a zoom lens comprising: a plurality of lens groups which are moved with respect to each other to change a focal length of said zoom lens; and a cam barrel comprises a first barrel and second barrel; a moveable external barrel positioned around an outer periphery of said second barrel to be guided in the optical axis direction without rotating about said optical axis; an inward pin, fixed to said moveable external barrel, which projects radially inwards; and a stop formed on said outer peripheral surface of said first barrel projecting radially outwards; a linear guide barrel which guides said plurality of lens groups in said optical axis direction,

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and is positioned inside said first barrel to be rotatable about said optical axis direction relative to said first barrel and immovable in said optical axis direction relative to said first barrel; and a flange ring fixed to the front end of said linear guide barrel, wherein said second barrel is fitted on said outer peripheral surface of said first barrel between said flange ring and said stop to be movable in the optical axis direction by a predetermined amount of movement corresponding to said predetermined clearance; wherein said first barrel comprises an annular raised portion formed on said outer peripheral surface of said first barrel in a vicinity of said front end of said first barrel to project radially outwards, wherein a width of said annular raised portion in said optical axis direction is smaller than an axial length of said second barrel, wherein an inner peripheral surface of said second barrel partly contacts with said annular raised portion, and wherein a slight gap is formed between said inner peripheral surface of said second barrel and said outer peripheral surface of said first barrel behind said annular raised portion with respect to the optical axis; and stationary barrel; and a female helicoid formed on an inner peripheral surface of said stationary barrel, wherein said first barrel of said cam barrel comprises a male helicoid formed on an outer peripheral surface thereof to be in mesh with said female helicoid of said stationary barrel.

8. Claims 22-31 allowed.

Referring to claims 22-31, the prior art does not teach or fairly suggest zoom lens comprising: a plurality of lens groups which are moved with respect to each other to change a focal length of said zoom lens; a movable hood barrel guided in a direction of an optical axis; an inward pin fixed to said movable hood barrel, said inward pin projecting radially inwards; a cam barrel which is positioned inside said movable hood barrel to be rotatable about said

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optical axis; and a guide groove formed on an outer peripheral surface of said cam barrel, said inward pin being engaged with said guide groove so that said movable hood barrel moves in said optical axis direction by rotation of said cam barrel.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- a. Azegami et al. U.S 5,956,189 disclosed is a linear guiding mechanism of a zoom lens barrel.
 - b. Nomura et al. U.S. 5,535,057 discloses a driving device for a zoom lens barrel in a camera which includes a movable cylinder linearly guided in the optical axis direction.
 - c. Funahashi U.S. 6,115,197 discloses a zoom lens barrel has a stationary barrel, a rotatable camera barrel, a straight-movable barrel, a first lens component a second lens component.
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Lin Ye** whose telephone number is **(703) 305-3250**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R Garber can be reached on (703) 305-4929.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC. 20231

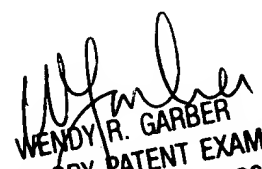
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Or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive,
Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Technology Center 2600 Customer Service Office whose telephone
number is (703) 306-0377.


WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Lin Ye
June 3, 2004